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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/941,820      | 08/28/2001  | James G. Fleming     | 6261.1/97639        | 7965             |

7590 07/11/2003

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EXAMINER

MULPURI, SAVITRI

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 07/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

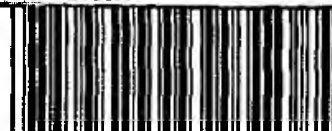
# Office Action Summary

Application No.  
09/941,820

Applicant(s)  
Fleming et al

Examiner  
Savitri Mulpuri

Art Unit  
2812



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on May 23, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 52-83 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 52-83 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4 6) ☐ Other:

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### **DETAILED ACTION**

This action is in response to the applicant's election product claims 52-83

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 53-55, 59-60, 61-62, 69-83 are rejected under 35 U.S.C. 102(b) as being anticipated by Sozuer et al.

Sozuer teaches a product of semiconductor based photopic band structures having band gap, as popularly called as woodpile structures initially through computer simulation and subsequently through experiments (abstract and discussion section and see figure 1b, 1d). Sozuer et al teaches three photopic band structures having plurality of rods, where in rods in each layer are rotated by 120 degrees (see fig. 1b). Sozuer also discloses four layer photopic band structure rod are rotated by 45 degrees (see fig. 1d). Sozuer also discloses photopic band structures are in hexagonal lattice, which resulted from plurality of honey comb layers as shown in fig. 1).

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 52-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Noda et al (Japanese journal appl Physics) or Fleming et al or Gruening (DE 19743296) in combination with Sozuer et al.

Noda et al discloses a semiconductor photonic band structure with first, second and third plurality of rods having band gap as popularly known as woodpile structure. Fleming and Gruening also teaches photonic band structure with first, second and third plurality of rods. All primary references Noda, Fleming and Gruening essentially requires interconnection layer for producing rods.

But Noda or Fleming or Gruening do not teach rotation of each set of rods resulted from single semiconductor layer is rotated by 120 degrees from the adjacent rods.

Sozuer et al teaches photonic structure including rotation of set rods by 120 degrees to adjacent set of rods. It would have been obvious to form hexagonal or triangular lattice by rotating each set rods from the adjacent set by 120 degrees from the honeycomb of layers in the invention of Noda or Fleming or Gruening as suggested by Sozuer et al for variety of optoelectronic devices.

Neither Noda or Fleming or Gruening or Sozuer et al do not disclose photonic band structure having first and second and third with different thickness of rods, size of rods and

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spacing of the rods. Photonic band structure with different set of rods with different size, different thickness and different spacing of rods would have been well within scope of one of ordinary skill in the art because such variation would give optical array with wide range of different electro-optical devices such as lasers, mirrors or optical switches, filters etc.

Note that the subject matter of Gruning et al (DE 19743296 C) is same as Gruning (US 6,468,348) in english version.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Mulpuri whose telephone number is 703-305-5184. The fax phone number for the organization where this application or proceeding is assigned is 703-308-0956.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-7722.

  
SAVITRI MULPURI  
PRIMARY EXAMINER